

IT SKILLS IMPORTANT

Q: Describe CRT Monitors?

Ans.

CRT Monitors:

A CRT monitor is a TV-screen-like device. This type of monitor uses a **cathode ray tube (CRT)** to display images.

The screen of the monitor is coated with tiny dots of phosphor. The phosphor dots glow when they are electrically charged. An electronic beam generated by the CRT charges these dots.

A CRT consists of one or more guns which fire a beam of electrons on the surface of the screen. The beam of electrons repeatedly falls on the surface of screen from top to bottom, dot by dot and line by line. Each beam-fall takes only a fraction of a second.

A stream of bits defining the image of output is sent from the computer (from the CPU) to the graphic card from where it translates the signal & sends to CRT's electron gun, where the bits are converted to electrons. The inside of the front of the CRT screen is coated with phosphor. When a beam of electrons from the electron gun hits the dots of phosphor, it lights up the selected pixels and an image of output is generated on the screen.

CRT in color displays consists of three guns, one each for red, green and blue color. These guns generate red, green and blue light on the screen. The combination of these three colors makes the full color spectrum and displays a color picture. These types of monitors are also called the **RGB monitors**.

IT SKILLS IMPORTANT

Q. Describe Flat-Panel Displays Screens.

Ans.

Flat Panel Display:

A flat-panel display is a lightweight, thin screen. There are two types of flat panel displays. These are Liquid Crystal Display (LCD) and Gas Plasma Display.

Liquid Crystal Display (LCD) uses a liquid crystal display (LCD) to create an image on the screen. A liquid crystal display has special molecules deposited between sheets of glass. When an electric current pass through them, the molecules twist, causing some light waves to be blocked and allowing others to pass through. This creates the desired images on the screen.

Advantages and uses of Flat Panels:

LCD displays require less power and take up less space than the traditional CRT monitors. They are commonly used in portable computers, digital watches and calculators.

Gas Plasma Monitor:

Gas plasma monitor gas plasma technology. In this technology, a layer of gas is used in LCD monitor, when voltage is applied the gas which makes the required pixels to glow & form the image on the screen.

Gas plasma monitors offer larger screen sizes and higher display quality than LCD display screen. They are also much more expensive.

IT SKILLS IMPORTANT

Difference in LCD Monitors and CRT Monitors

The main differences between CRT and LCD monitors are as follows:

CRT Monitors:

1. They use Cathode Rays Tube to display output on screen.
2. They are very heavy compared to LCD Monitors.
3. They require more energy such as LCD monitors (such as 100w – 1800w depending on size)
4. They cannot be used with less voltage systems directly such as battery hence they require a very high amount of voltages. They require a high voltage transformer in them to power them.
5. They were less expensive than LCD Monitors.
6. They are very old and no longer being produced.

LCD Monitors:

1. It uses Liquid Crystal Technology to display the output on screen
2. Weighs less than CRT Monitors.
3. It is portable compared to CRT Monitors.
4. It consumes less energy than CRT Monitors. (such as 30w to 120w).
5. It requires less voltages to operate. (such as 3v to 48v).
6. It was more expensive than CRT Monitors.
7. Now a days these are widely used and known.

IT SKILLS IMPORTANT

Q. What is active matrix LCD and passive matrix LCD?

Ans.

(i) Active-matrix LCDs:

Active-matrix LCDs depend on thin film transistors (TFT). Basically, TFTs are tiny switching transistors and capacitors. They are arranged in a matrix on a glass substrate. To address a pixel the proper row is switched on, and then a charge is sent down to the correct column. Since all the other rows that the column intersects are turned off, only the capacitor at the designated pixel receives a charge. The capacitor can hold the charge until the next refresh cycle. And if we carefully control the amount of voltage supplied to a crystal, we can make it untwist only enough to allow some light through. By doing this in very exact, very small increments, LCDs can create a gray scale. Most displays today offer 256 levels of brightness per pixel.

Passive-matrix LCDs:

Passive-matrix LCDs use a simple grid to supply the Charge to a particular pixel on the display. Creating the grid is quite a process! It starts with two glass layers called substrates, One substrate is given columns and the other is given rows made from a transparent conductive material. This is usually indium-tin oxide. The rows or columns are connected to integrated circuits that control when a charge is sent down a certain column or row. The liquid crystal material is sandwiched between the two glass substrates, and a polarizing film is added to the outer side of each substrate. To turn on a pixel, the integrated circuit sends a

IT SKILLS IMPORTANT

charge down that correct column of one substrate and a ground activated on the correct row of the other. The row and column intersect at the designated pixel, and that delivers the voltage to untwist the liquid crystals at that pixel.

The simplicity of the passive-matrix system is beautiful, but it has significant drawbacks, notably slow response time and imprecise voltage control. Response time refers to the LCD's ability to refresh the image displayed. The easiest way to observe slow response time in a passive-matrix LCD is to move the mouse pointer quickly from one side of the screen to the other. You will notice a series of "ghosts" following the pointer. Imprecise voltage control hinders the passive matrix's ability to influence only one pixel at a time. When voltage is applied to untwist one pixel, the pixels around it also partially untwist, which makes images appear fuzzy and lacking in contrast.

IT SKILLS IMPORTANT

Q. What is difference Between Active-matrix display and passive-matrix?

Ans. Liquid crystal display (LCD) uses a liquid compound to present information on a display device.

LCD monitors-and LCD screens typically produce color using either active-matrix or passive-matrix technology.

(i) Active-matrix display:

An active-matrix display, also known as a TFT (thin-film transistor) display, uses a separate transistor to apply charges to each liquid crystal cell and thus displays high quality color that is viewable from all angles.

(ii) Passive-matrix display:

A passive-matrix display uses fewer transistors hence requires less power and is less expensive than an active-matrix display. The color on a passive-matrix display often is not as bright as an active matrix display. Users view images on a passive-matrix display best when working directly in front of it.

OR

(i) Active Matrix Displays:

- i. Active Matrix display are also known as TFT (Thin File Transistors) displays.
- ii. They use less transistors then Passive matrix display.
- iii. They produce high quality color output result which is viewable from all angles.

IT SKILLS IMPORTANT

- iv. They use more power than passive matrix displays.
- v. They are expensive then passive matrix displays.

(ii) Passive Matric Display:

- i. They use less transistors then Active matrix displays
- ii. They are cheaper then Active matrix.
- iii. They have high latency and take more time to refresh the image.
- iv. They use less power than passive matrix.
- v. They output result quality is lower then active matrix and not clearly viewable from all angles.

Student Notes:

1. Chapter 3 is very important chapter.

2. Point that are color coded are important and memorized.

3. Last Question with same color as this line is very important and should not be skipped it has appeared in S/2018.